

WHAT IS CLAIMED IS:

- 1           1.     A method for inserting a bone block into a  
2 patient's intervertebral space, comprising:  
3                 supporting the bone block in an inserter;  
4                 advancing the inserter into the intervertebral  
5 space;  
6                 rotating the inserter by 90°, thereby separating  
7 the adjacent vertebrae by camming action; and  
8                 removing the inserter from the intervertebral  
9 space.
- 1           2.     The method of claim 1, wherein rotating the  
2 inserter, thereby separating the adjacent vertebrae by  
3 camming action, comprises:  
4                 engaging convexly curved camming surfaces on the  
5 inserter against the adjacent vertebrae.
- 1           3.     The method of claim 1, wherein advancing the  
2 inserter into the intervertebral space comprises:  
3                 advancing the inserter through a cannula which has  
4 been percutaneously introduced into the patient.
- 1           4.     The method of claim 2, wherein,  
2                 the cannula is introduced in a posterolateral  
3 approach.
- 1           5.     The method of claim 1, wherein the inserter  
2 has a central longitudinally extending axis, and wherein  
3 rotating the inserter comprises:  
4                 rotating the inserter about a central longitudinal  
5 axis passing therethrough.
- 1           6.     The method of claim 1, wherein removing the  
2 inserter comprises:

3            withdrawing the inserter while simultaneously  
4 holding the bone block in a stationery position with a push  
5 rod, the push rod being slidably received in a  
6 longitudinally extending bore in the inserter.

1            7. The method of claim 1, wherein removing the  
2 inserter comprises:

3            rotating the bone block to an anchored position  
4 such that vertebral support surfaces on the bone block  
5 engage the adjacent vertebrae, holding the bone block in  
6 position and slidably withdrawing the inserter from the bone  
7 block.

1            8. The method of claim 7, wherein the push rod  
2 and the bone block are threadably interconnected, with the  
3 push rod being received into a threaded bore in the bone  
4 block, further comprising:

5            rotating the push rod to unscrew the push rod from  
6 the bone block, thereby disconnecting the push rod from the  
7 bone block.

1            9. The method of claim 1, wherein removing the  
2 inserter from the intervertebral space comprises:

3            removing the inserter in sections, with each of  
4 the sections extending the longitudinal length of the  
5 inserter.

1            10. The method of claim 9, wherein,  
2 the sections comprise two opposite halves of the  
3 inserter.

1            11. The method of claims 3, wherein,  
2 the cannula has an oval or racetrack-shaped cross  
3 section, the cross section being defined by an ellipse  
4 having a major dimension and a minor dimension.

1           12. The method of claims 9, wherein,  
2           the cannula has an oval or racetrack-shaped cross  
3 section, the cross section being defined by an ellipse  
4 having a major dimension and a minor dimension.

1           13. The method of claim 12, wherein,  
2           the cannula is disposed with the major dimension  
3 of the ellipse parallel to the adjacent vertebrae; and  
4           the inserter has a cross section defined by a  
5 major dimension and a minor dimension, wherein rotation of  
6 the inserter causes the major dimension of the inserter to  
7 be disposed perpendicular to the adjacent vertebrae.

1           14. The method of claim 13, wherein removing the  
2 inserter from the intervertebral space comprises:  
3           removing separate sections of the inserter through  
4 the cannula when the major dimension of the cross section of  
5 the inserter is perpendicular to the major dimension of the  
6 cross section of the cannula.

1           15. A method for positioning interlocking first  
2 and second bone blocks in a patient's intervertebral space,  
3 comprising:  
4           supporting a first the bone block in a first  
5 inserter;  
6           advancing the first inserter into the  
7 intervertebral space;  
8           rotating the first inserter, thereby separating  
9 adjacent vertebrae;  
10          removing the first inserter;  
11          supporting a second the bone block in a second  
12 inserter;  
13          advancing the second inserter into the  
14 intervertebral space;  
15          rotating the second inserter;

16           removing the second inserter;  
17           interlocking the first and second bone blocks; and  
18           removing the first and second inserters from the  
19 intervertebral space.

1           16. The method of claim 15, wherein advancing the  
2 first and second inserters into the intervertebral space  
3 comprises:

4           advancing the first and second inserters through  
5 separate cannulae which have been percutaneously introduced  
6 into the patient in posterolateral approaches.

1           17. The method of claim 16, wherein,  
2 the first and second cannulae are disposed  
3 generally perpendicular to one another.

1           18. The method of claim 15, wherein interlocking  
2 the first and second bone blocks comprises:  
3           interlocking a protrusion on the first bone block  
4 with an aperture on a second bone block.

1           19. The method of claim 15, wherein interlocking  
2 the first and second bone blocks comprises:  
3           interlocking a notch on the first bone block with  
4 a groove on a second bone block.

1           20. The method of claims 18 or 19, further  
2 comprising:  
3           fastening a fastening pin between the first and  
4 second bone blocks.

1           21. A system for introducing a bone block into  
2 the intervertebral space of a patient, comprising:  
3           an rotatable inserter having two prongs at a  
4 distal end; and  
5           a bone block received between the two prongs.

1           22. The system of claim 21, wherein, each prong  
2 has an outer convexly curved camming surface.

1           23. The system of claim 21, wherein,  
2 the two prongs are disposed on opposite sides of  
3 the bone block, with each prong having a longitudinally  
4 extending groove on an inner surface adjacent the bone  
5 block.

1           24. The system of claim 22, wherein,  
2 the bone block has lateral protrusions which  
3 extend longitudinally along the length of the bone block;  
4 and

5           wherein the lateral protrusions on the bone block  
6 are dimensioned to mate with the longitudinally extending  
7 grooves on the inner surfaces of the prongs such that the  
8 bone block can slide longitudinally between the prongs.

1           25. The system of claim 21, further comprising:  
2 a cannula dimensioned to receive the inserter  
3 therein.

1           26. The system of claim 21, wherein,  
2 the cannula has an oval or racetrack-shaped cross  
3 section, the cross section being defined by an ellipse  
4 having a major dimension and a minor dimension.

1           27. The system of claim 24, wherein,  
2 the inserter comprises a first half and a second  
3 half which are separable from one another such that the  
4 first and second halves can be separately withdrawn through  
5 the cannula.

1           28. The system of claim 21, wherein,  
2 the bone block has at least one anchoring fin.

1           29. The system of claim 21, wherein,  
2           the bone block is cannulated along its length.

1           30. The system of claim 29, further comprising:  
2           a fastening pin dimensioned to be received in the  
3           cannulation in the bone block.

1           31. The system of claim 21, further comprising:  
2           a second bone block, wherein the second bone block  
3           is adapted to interlock with the bone block.

1           32. A bone block having opposite vertebral  
2           contact surfaces and opposite sides spanning between the  
3           opposite vertebral contact surfaces, wherein,  
4           the opposite vertebral contact surfaces each have  
5           a width which is about 20% to 60% of the height of the  
6           opposite sides spanning between the opposite vertebral  
7           contact surfaces.

1           33. The bone block of claim 32, wherein,  
2           the bone block has lateral protrusions which  
3           extend longitudinally along the length of the bone block.

1           34. The bone block of claim 32, wherein,  
2           the bone block has an angled front end.

1           35. The bone block of claim 32, wherein,  
2           the bone block tapers between longitudinally  
3           spaced apart ends, thereby compensating for a lordotic angle  
4           between adjacent vertebrae in the patient's intervertebral  
5           space.

1           36. A method for inserting a plurality of bone  
2           blocks in a patient's intervertebral space, comprising:  
3           supporting a first bone block in a first inserter;  
4           advancing the first inserter through a first  
5           cannula into the intervertebral space;

6 rotating the first inserter, thereby positioning  
7 the first bone block between adjacent vertebrae;  
8 removing the first inserter;  
9 advancing a first push rod through a second  
10 cannula to move the first bone block away from the distal  
11 end of the first cannula;  
12 supporting a second the bone block in a second  
13 inserter;  
14 advancing the second inserter through the second  
15 inserter into the intervertebral space;  
16 rotating the second inserter;  
17 removing the second inserter; and  
18 advancing a second push rod through the first cannula to  
19 move the second bone block in an direction away from a  
20 distal end of the second cannula.

1 37. The method of claim 36, wherein,  
2 the directions away from the distal ends of the  
3 first and second cannulae are anterior directions.

1 38. The method of claim 36, further comprising:  
2 supporting a third bone block in the first inserter;  
3 advancing the first inserter through a first  
4 cannula into the intervertebral space;  
5 rotating the first inserter, thereby positioning  
6 the third bone block between adjacent vertebrae;  
7 removing the first inserter; and  
8 advancing a first push rod through the second  
9 cannula to move the third bone block away from the distal  
10 end of the first cannula.

1 39. The method of claim 38, further comprising:  
2 supporting a fourth bone block in the second  
3 inserter;  
4 advancing the second inserter through the second  
5 cannula into the intervertebral space;

6 rotating the second inserter, thereby positioning  
7 the fourth bone block between adjacent vertebrae;  
8 removing the second inserter; and  
9 advancing the second push rod through the first  
10 cannula to move the fourth bone  
11 block away from the distal end of the second cannula.

1 40. A bone block intervertebral insert comprising:  
2 an electrical transducer within the body of the  
3 insert, the transducer adapted to produce electrical current  
4 of a type and in an amount sufficient to induce osteogenesis  
5 in adjacent vertebrae as the result of relative spinal  
6 loading of the insert.

7  
8 41. The method of claim 15, wherein interlocking  
9 the first and second bone blocks comprises:  
10 suturing the first and second bone blocks  
11 together.